

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CH2004/000410

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F16H33/02 F16F15/30 H02K7/02 H02K49/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F16H F16F F16D H02K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02/41477 A (SCHROETTER JOHNNES ; PLANETENERGY LTD. (LI)) 23 May 2002 (2002-05-23) the whole document	1
A	EP 0 683 317 A (TAKARA MUNEAKI) 22 November 1995 (1995-11-22) column 30, line 26 - column 31, line 6; figure 28	1
A	GB 845 654 A (ALBERT VICTOR CLARKE) 24 August 1960 (1960-08-24) the whole document	1

☐ Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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\*A\* document member of the same patent family

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0241477	A	23-05-2002	AU 1515002 A	27-05-2002
			CA 2428419 A1	23-05-2002
			CN 1475042 T	11-02-2004
			EP 1340309 A1	03-09-2003
			WO 0241477 A1	23-05-2002
			JP 2004523696 T	05-08-2004
			US 2004046468 A1	11-03-2004
EP 0683317	A	22-11-1995	JP 5209586 A	20-08-1993
			JP 5340340 A	21-12-1993
			CA 2120757 A1	15-04-1993
			DE 69224398 D1	12-03-1998
			DE 69224398 T2	20-05-1998
			EP 0683317 A1	22-11-1995
			US 5590568 A	07-01-1997
			WO 9307387 A1	15-04-1993
GB 845654	A	24-08-1960	NONE	

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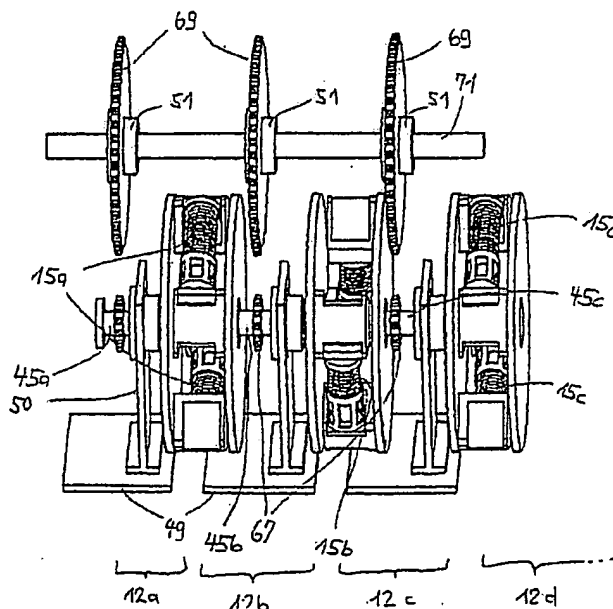
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(81) Bestimmungsstaaten (soweit nicht anders angegeben, für  
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CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES,  
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MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,

[Fortsetzung auf der nächsten Seite]

(54) Title: METHOD AND DEVICE FOR THE MECHANICAL TRANSMISSION OF FORCE

(54) Bezeichnung: VERFAHREN UND VORRICHTUNG ZUR MECHANISCHEN KRAFTÜBERTRAGUNG



(57) Abstract: The invention relates to a method and a device for transmitting force by means of spring interaction. According to the invention, a plurality of supports (11) are provided for receiving or positioning one or several springs (15), shock absorbers, or similar, each support being disposed on bearing means. Each support is connected to one or several freewheeling means, e.g. freewheel bearings, such that each support is rotatably or movably guided in a single direction about an axis of rotation or along a straight or curved axis of translation. Furthermore, each support is fitted with one or several individual springs, shock absorbers, or similar in a predefined arrangement. A plurality of such supports are positioned at a distance from each other in such a way that a momentum transmitted to a first support is transmitted by said first support to an adjacent second support by means of spring interaction, is transmitted by said second support to the third support that adjoins the second support, etc. An essential characteristic of the invention lies in the fact that virtually the entire momentum is transmitted to the next closest respective

support as a support that has been set in motion is prevented by the freewheeling means from travelling in the reverse direction such that an initial momentum that is transmitted once from an external source of momentum to the mechanical force-transmitting device can be transmitted practically free of loss across long distances similar to a wave. The momentum can be maintained for an extended period of time at low frictional resistance if the path of travel is closed, e.g. in a circle.

[Fortsetzung auf der nächsten Seite]

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TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(84) *Bestimmungsstaaten (soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart):* ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT,

**Veröffentlicht:**

— mit internationalem Recherchenbericht

*Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.*

(57) **Zusammenfassung:** Die vorliegende Erfindung betrifft ein Verfahren und eine Vorrichtung zur Kraftübertragung mittels Feder-Wechselwirkung. Dabei wird eine Mehrzahl von Supports (11) zur Aufnahme oder Anordnung von einer oder mehreren Federn (15), Stossdämpfern oder dergleichen vorgesehen und jeder Support auf Lagermitteln angeordnet. Jeder Support steht mit einem oder mehreren Freilaufmitteln, z.B. Freilaufslagern, in Verbindung, sodass jeder Support um eine Drehachse oder entlang einer geraden oder gekrümmten Translationsachse in nur einer Richtung dreh- resp. beweglich geführt wird. Ausserdem wird jeder Support mit jeweils einem oder mehreren einzelnen Federn, Stossdämpfern oder dergleichen in einer vorbestimmten Anordnung bestückt. Eine Mehrzahl derartiger Supports wird in Abstand so relativ zueinander angeordnet, dass ein auf einen ersten Support übertragener Impuls von diesem ersten Support mittels Federwechselwirkung auf einen benachbarten zweiten Support, von diesem zweiten Support auf den zum zweiten Support benachbarten dritten Support usw. übertragen wird. Wesentlich dabei ist, dass durch den durch die eingesetzten Freilaufmittel verunmöglichten Rücklauf eines in Bewegung gesetzten Supports eine praktisch vollständige Impulsübertragung auf den jeweils nächsten Support bewirkt wird, sodass ein von einem externen Impulsgeber einmal auf die mechanische Kraftübertragungsvorrichtung übertragener Startimpuls ähnlich einer Welle praktisch verlustfrei über grosse Strecken übertragbar ist. Ist die Strecke in sich geschlossen, z.B. ein Kreis, so kann der Impuls bei nur geringem Reibwiderstand über längere Zeit erhalten bleiben.

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Minimum documentation searched (classification system followed by classification symbols)  
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X	WO 02/41477 A (SCHROETTER JOHNNES ; PLANETENERGY LTD (LI)) 23 May 2002 (2002-05-23) page 11, paragraph 4; claims; figures	1-30
X	EP 0 683 317 A (TAKARA MUNEAKI) 22 November 1995 (1995-11-22) column 30, line 15 - line 25	1,9
A	SU 934 087 A (IGNATKIN VLADIMIR) 7 June 1982 (1982-06-07) figure	1,9
A	-& DATABASE WPI Derwent Publications Ltd., London, GB; AN 1983-F3070K XP000069471 abstract	1,9
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- \*&\* document member of the same patent family

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Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

International Application No  
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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 1 493 232 A (BARTON FREDERICK C) 6 May 1924 (1924-05-06) page 2, line 38 - line 50	1,9
A	US 1 371 023 A (EDWARDS) 8 March 1921 (1921-03-08) figure 11	1,9
A	DE 425 244 C (JOSEF KUHNEN) 13 February 1926 (1926-02-13) figures 2,4	1,9

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Information on patent family members

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PCT/CH2004/000409

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WO 0241477	A	23-05-2002	AU 1515002 A	27-05-2002
			CA 2428419 A1	23-05-2002
			CN 1475042 T	11-02-2004
			EP 1340309 A1	03-09-2003
			WO 0241477 A1	23-05-2002
			JP 2004523696 T	05-08-2004
			US 2004046468 A1	11-03-2004
EP 0683317	A	22-11-1995	JP 5209586 A	20-08-1993
			JP 5340340 A	21-12-1993
			CA 2120757 A1	15-04-1993
			DE 69224398 D1	12-03-1998
			DE 69224398 T2	20-05-1998
			EP 0683317 A1	22-11-1995
			US 5590568 A	07-01-1997
			WO 9307387 A1	15-04-1993
SU 934087	A	07-06-1982	SU 934087 A1	07-06-1982
US 1493232	A	06-05-1924	NONE	
US 1371023	A	08-03-1921	NONE	
DE 425244	C	13-02-1926	NONE	